GranDSLAM® 4200 IP DSLAM

Installation Guide

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June 2004

PARADYNE®

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⚠ Important Safety Instructions

1. Read and follow all warning notices and instructions marked on the product or included in the manual.
2. This product is to be connected to a nominal –48 or –60 VDC supply source that is electrically isolated from the AC source. The positive terminal of the DC source is to be reliably connected to earth. Connect a green/yellow earthing (grounding) wire to the protective earthing (grounding) screw, identified by the protective earth symbol on the front of the chassis.
3. **FUSE WARNING:** An energy hazard (a potential equal to or greater than 240VA) may exist at the fuse holder. When installing or replacing either of the alarm-indicating fuses, do not contact metal parts of the fuse spring arm, which may be energized, even after the fuse has tripped. Never remove the plastic fuse cap from the fuse; it is there to protect against inadvertent contact with the spring arm. Refer all fuse installation/replacement to qualified service personnel who have been trained on this equipment.

   CAUTION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH THE SAME TYPE AND RATING OF FUSE. Use a fuse that is rated for a minimum 60 VDC, maximum 4A.

   ATTENTION: Pour ne pas compromettre la protection contre les risques d'incendie, remplacer par un fusible de même type et de mêmes caractéristiques nominales.
4. This product may only be used in a Restricted Access Location in accordance with the requirements of the National Electric Code, ANSI/NFPA 70, or in accordance with the standards and regulatory requirements of the country in which it is installed. A Restricted Access Location is a secure area (dedicated equipment rooms, equipment closets, or the like) for equipment where access can only be gained by service personnel or by users who have been instructed about the reasons for the restrictions applied to the location and about any precautions that must be taken. In addition, access into this designated secured area is possible only through the use of a tool or lock and key, or other means of security, and is controlled by the authority responsible for the location.
5. A readily accessible disconnect device as part of the building installation shall be incorporated in fixed wiring. The DC disconnect device must be rated at a minimum 48 VDC, minimum 2A. The disconnect device shall be readily accessible to the operator. The disconnect device must be included with an adequately rated fuse or circuit breaker in the ungrounded conductor. Use a minimum 18 AWG (0.75 mm²) fixed power source wires with strain retention.
6. Input power to the ALARM relay interface (located on the front panel of the enclosure) must not exceed 30 V rms or 60 VDC.
7. Do not allow anything to rest on the power cord and do not locate the product where persons will walk on the power cord.
8. Slots and openings in the cabinet are provided for ventilation. To ensure reliable operation of the product and to protect it from overheating, these slots and openings must not be blocked or covered.
9. Do not attempt to service this product yourself, as it will void the warranty. Opening or removing covers may expose you to dangerous high voltage points or other risks. Refer all servicing to qualified service personnel.
10. A rare phenomenon can create a voltage potential between the earth grounds of two or more buildings. If products installed in separate buildings are interconnected, the voltage potential may cause a hazardous condition. Consult a qualified electrical consultant to determine whether or not this phenomenon exists and, if necessary, implement corrective action prior to interconnecting the products.
11. **CLASS 1 LASER PRODUCT:** This product has provisions for the customer to install a Class 1 laser transceiver, which provides optical coupling to the telecommunication network. Once a Class 1 laser product is installed, the equipment is to be considered to be a Class 1 Laser Product (Appareil à Laser de Classe 1). The customer is responsible for selecting and installing the laser transceiver and for insuring that the Class 1 AEL (Allowable Emission Limit) per EN/IEC 60825 is not exceeded after the laser transponders have been installed. Do not install laser products whose class rating is greater than 1. Refer to all important safety instructions that accompanied the transceiver prior to installation. Only laser Class 1 devices certified for use in the country of installation by the cognizant agency are to be utilized in this product. Also, laser warnings are to be provided in accordance with IEC 60825-1 and its Amendments 1 and 2, as well as 21 CFR 1010 and 1040.10(g).
12. General purpose cables are described for use with this product. Special cables, which may be required by the regulatory inspection authority for the installation site, are the responsibility of the customer. To reduce the risk of fire, use a UL Listed or CSA Certified, minimum No. 26 AWG (0.128 mm^2) telecommunication cable, or comparable cables certified for use in the country of installation.

13. The equipment is intended for installation in a maximum 149° F (65° C) ambient temperature, in an environment that is free of dust and dirt.
14. Do not physically stack more than eight (8) 42xx units high. Physical stability has not been evaluated for stacking higher than eight units, and any configuration greater than eight may result in an unstable (tip-over) condition. Ensure that the four (4) rubber feet supplied with the product have been installed on the bottom of each unit prior to stacking any 42xx units on top of one another.
15. In addition, if the equipment is to be used with telecommunications circuits, take the following precautions:
    - Never install telephone wiring during a lightning storm.
    - Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
    - Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
    - Use caution when installing or modifying telephone lines.
    - Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.
    - Do not use the telephone to report a gas leak in the vicinity of the leak.
16. If the equipment has an internal POTS splitter, then to be compliant with the Bellcore NEBS requirements GR-1089-CORE, sections 4.2.2 (Current Limiting Protectors) and 4.5.11 (Current Limiting Protector Tests), current limiting protectors shall be used on the DSL lines entering the facility. Also, to comply with GR-1089-CORE radiated emissions criteria, ferrite chokes must be installed as described in the installation instructions.
17. When installed in the final configuration, the product must comply with the applicable Safety Standards and regulatory requirements of the country in which it is installed. If necessary, consult with the appropriate regulatory agencies and inspection authorities to ensure compliance.

EMI Notices

⚠ UNITED STATES – EMI NOTICE:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

The authority to operate this equipment is conditioned by the requirements that no modifications will be made to the equipment unless the changes or modifications are expressly approved by Paradyne Corporation.

If the equipment includes a ferrite choke or chokes, they must be installed per the installation instructions.

⚠ CANADA – EMI NOTICE:

This Class A digital apparatus meets all requirements of the Canadian interference-causing equipment regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du réglement sur le matérial brouilleur du Canada.

Notices to Users of the Canadian Telephone Network

NOTICE: This equipment meets the applicable Industry Canada Terminal Equipment Technical Specifications. This is confirmed by the registration number. The abbreviation IC before the registration number signifies that registration was performed based on a Declaration of Conformity indicating that Industry Canada technical specifications were met. It does not imply that Industry Canada approved the equipment.

NOTICE: The Ringer Equivalence Number (REN) for this terminal equipment is labeled on the equipment and includes the effect of the POTS splitter. The REN assigned to each terminal equipment provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed five.

CE Marking

When the product is marked with the CE mark on the equipment label, a supporting Declaration of Conformity may be downloaded from the Paradyne World Wide Web site at **www.paradyne.com**. Select *Library* → *Technical Manuals* → *CE Declarations of Conformity.*

Japan

Class A ITE

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＡ情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

This is a Class A product based on the standard of the Voluntary Control Council for interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.

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About This Guide

Document Purpose and Intended Audience

This document is written for technicians who install the GranDSLAM® 4200 IP DSLAM.

Document Summary

Section	Description
Chapter 1, *Installation*	Describes the physical installation of the GranDSLAM 4200 into a rack.
Chapter 2, *Cabling*	Describes how to install all cables for the GranDSLAM 4200.
Chapter 3, *LEDs*	Explains the meaning and usage of the front panel LEDs.
Chapter 4, *Configuration*	Describes the minimal configuration steps required to prepare the GranDSLAM 4200 for remote access, using the command line interface and web interface.
Appendix A, *Connectors and Pin Assignments*	Provides pinouts for all connectors on the GranDSLAM 4200.
Appendix B, *Equipment List*	Provides part numbers for the GranDSLAM 4200 and related products.
Appendix C, *Technical Specifications*	Lists the technical characteristics of the GranDSLAM 4200.
Index	Lists key terms, acronyms, concepts, and sections in alphabetical order.

A master glossary of terms and acronyms used in Paradyne documents is available on the World Wide Web at **www.paradyne.com**. Select *Support* → *Technical Manuals* → *Technical Glossary.*

Related Product Documents

Documentation for the GranDSLAM 4200 IP DSLAM is available on the World Wide Web at **www.paradyne.com**. Select *Support* → *Technical Manuals.*

Document Number	Document Title
2600-A2-GB21	*BitStorm 2600 and GranDSLAM 4200 IP DSLAM Command Line Interface Reference* Describes the Command Line Interface (CLI) used to configure and monitor the GranDSLAM 4200 IP DSLAM.
2600-A2-GB22	*BitStorm 2600 and GranDSLAM 4200 IP DSLAM SNMP Reference* Contains the information necessary to use Simple Network Management Protocol (SNMP) to configure and monitor the GranDSLAM 4200 IP DSLAM.
2600-A2-GT20	*BitStorm 2600 and GranDSLAM 4200 Training Guide* Describes how to configure the GranDSLAM 4200 IP DSLAM for triple play (video, voice, and data).
6210-A2-GB20	*Hotwire 6210-A2, 6211-A2, and 6381-A2 User's Guide* Describes the installation and operation of the 6210 ADSL bridge, 6211 ADSL router, and 6381 ADSL/R router.
7890-A2-GB22	*GrandVIEW EMS User's Guide* Contains instructions for maintaining network services and resources using the GrandVIEW Element Management System (EMS).

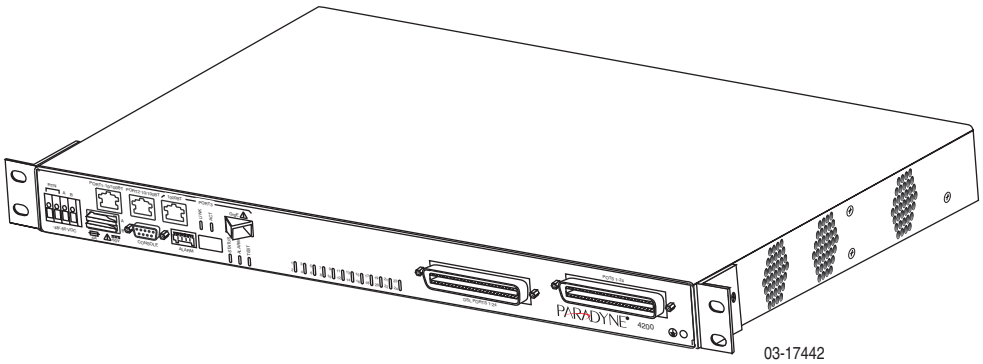
To order a paper copy of a Paradyne document, or to talk to a sales representative, please call 727-530-2000.

Installation

1

Overview

The GranDSLAM® 4200 is a family of stackable IP DSLAMs designed for installation in the Central Office (CO) environment. The GranDSLAM 4200 is available with or without internal POTS splitters.



03-17442

The ReachDSL™ Model 4219 is interoperable with the Hotwire® 6381 ADSL/R modem, as well as with all other Customer Premises Equipment (CPE) containing Asymmetric Digital Subscriber Line/ReachDSL (ADSL/R™) chipsets.

The ADSL Model 4229 is interoperable with the Hotwire 6381 ADSL/R modem, as well as any standard ADSL CPE. It supports ADSL, ADSL2, and ADSL2+.

The SHDSL Model 4279 is interoperable with any standard SHDSL CPE. It supports SHDSL (G.991.2).

A Command Line Interface (CLI) and a web browser interface are provided. The unit also may be managed using a network manager such as the Paradyne GrandVIEW™ Element Management System (EMS).

Up to eight GranDSLAM 4200 units can be logically stacked, with aggregation for up to 192 ports of DSL traffic. ReachDSL, ADSL, and SHDSL units can be included in the same stack.

GranDSLAM 4200 IP DSLAM models and features are listed in Table 1-1, GranDSLAM 4200 Models and Features.

Table 1-1. GranDSLAM 4200 Models and Features

Model Number	Type	Number of Ports	POTS Splitters
4219-A1-520	ReachDSL	24	No
4219-A1-530	ReachDSL	24	900-Ohm
4219-A1-531	ReachDSL	24	600-Ohm
4229-A2-520	ADSL	24	No
4229-A2-530	ADSL	24	900-Ohm
4229-A2-531	ADSL	24	600-Ohm
4279-A1-520	SHDSL	24	No

Preparation

Consider the following before installing the GranDSLAM 4200 IP DSLAM:

- **Installation Site**

  Your installation site should be well ventilated, clean, and free of environmental extremes.

- **Installation Options**

  The GranDSLAM 4200 may be:

  — Mounted with the included mounting brackets in a standard 19-inch (483 mm) or 23-inch (584 mm) rack (including both Bay Networks and Nortel 23-inch racks), or, with separately purchased mounting brackets, in a 21-inch (535 mm) ETSI rack. ETSI brackets are available from Paradyne. See Appendix B, *Equipment List*.

  As many GranDSLAM 4200 units may be mounted in a standard rack as there are 1.75-inch (44.45 mm) spaces in the rack, so long as adequate cooling is provided.

  — Mounted vertically against a wall.

  The standard mounting brackets provided can be fastened to the base of the unit for wall mounting.

  — Set on a shelf or desktop.

  Up to five GranDSLAM 4200 units may be stacked on a shelf or desktop. Different models can be mixed in a stack.

- **Power**

  The GranDSLAM 4200 operates from a –48 or –60 VDC power supply to allow for standard power connections available in a CO. For AC voltage environments, an external AC-to-DC power converter is required.

- **Other Cabling**

  No cables are provided with the GranDSLAM 4200. See Table 1-2, Cable Descriptions, to determine what cables you need to procure before installation.

Cables Required

Table 1-2 shows all the cables that may be required for your installation.

Table 1-2. Cable Descriptions

Connector Name	Connector and Cable	For Connecting . . .
DSL PORTS 1–24 POTS 1–24	50-pin RJ21X Telco-type straight connector and 50-wire cable. Two cables required, one for DSL and one for POTS (if used).	Up to 24 DSL ports to Main Distribution Frame, punchdown block, or splitters. Up to 24 POTS splitter ports to Main Distribution Frame or punchdown block.
Port 3 GigE	SFP Transceiver	An upstream GranDSLAM 4200 to a downstream GranDSLAM 4200, or a downstream GranDSLAM 4200 to an upstream GranDSLAM 4200 or network.
Port 3 1000BT	8-position modular plug and 8-wire Category 5 or better unshielded twisted pair (UTP) cable.	
Port 2 10/100BT	8-position modular plug and 8-wire Category 5 or better unshielded twisted pair (UTP) cable.	
Port 1 10/100BT	8-position modular plug and 8-wire Category 5 or better unshielded twisted pair (UTP) cable.	A Network Management System (NMS) over a Local Area Network (LAN) employing 10BaseT or 100BaseT.
CONSOLE	DB9 plug connector and shielded cable. ■ The other connector depends on the serial port on your terminal or PC, but normally is a DB9 socket. ■ The other connector depends on the serial port on your modem, but normally is a DB25 plug. A null modem (crossover) cable is required.	The GranDSLAM 4200 to one of the following: ■ A terminal or a PC with a terminal emulation program, or ■ A modem.
ALARM	5-position terminal block and shielded, twisted-pair cable.	The GranDSLAM 4200 to an alarm system.

Unpacking the Hardware

HANDLING PRECAUTIONS FOR STATIC-SENSITIVE DEVICES

This product is designed to protect sensitive components from damage due to electrostatic discharge (ESD) during normal operation. When performing installation procedures, however, take proper static control precautions to prevent damage to equipment. If you are not sure of the proper static control precautions, contact your nearest sales or service representative.

The GranDSLAM 4200 is shipped in a cardboard shipping container. Carefully remove the unit from its shipping container and check for physical damage. If the unit shows signs of shipping damage, notify your sales representative.

Package Contents

In addition to this installation guide, the GranDSLAM 4200 shipping carton should contain:

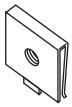
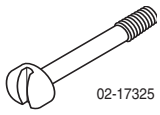
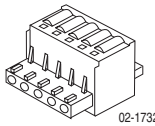
- GranDSLAM 4200
- Two sets of mounting brackets, one set suitable for a 19-inch (483 mm) rack and one set suitable for a 23-inch (584 mm) rack (including Bay Networks and Nortel)
- Hardware kit (see Table 1-3, Contents of Hardware Kit Shipped with the GranDSLAM 4200)

If anything is missing, notify your sales representative.

Before installing the GranDSLAM 4200, read the *Important Safety Instructions* in the beginning of this document.

Be sure to register your warranty at **www.paradyne.com/warranty**.

Table 1-3. Contents of Hardware Kit Shipped with the GranDSLAM 4200

Appearance	Description	Quantity
02-17259	Flat-head screw for attaching 19" mounting brackets to unit	6
02-17326	Machine screw with captive starwasher (6-32 x 1/4″) for attaching 23" mounting brackets to unit	6
 02-17256	Self-retaining nut for racks without threaded holes	4
02-17257	Dress screw (12-24 x 1/2″) for use with self-retaining nuts	4
02-17258	Machine screw with captive starwasher (10-32 x 1/2″) for use with racks with threaded holes	4
 02-17325	Captive pan-head screw for replacing long Telco screw	2
02-17261	Rubber foot for desk-mount and stacking of units	4
02-17262	Cable tie (8″) for strain relief and cable management	2
 02-17327	5-position plug for ALARM connection	1

Mounting Configurations

Three basic installation configurations are available:

- Rack mount – see *Installing the Brackets for Rack Mounting* on page 1-6 and *Installing the GranDSLAM 4200 Into a Rack* on page 1-8.
- Wall mount – see *Installing the GranDSLAM 4200 on a Wall* on page 1-10.
- Shelf or desktop – see *Installing the GranDSLAM 4200 on a Shelf or Desktop* on page 1-12.

Mounting Brackets

Your GranDSLAM 4200 can be installed in a rack or on the wall using mounting brackets. Two brackets suitable for a 19-inch (483 mm) rack (marked EIA-19) and two brackets suitable for a 23-inch (584 mm) Bay Networks or Nortel rack (marked with Paradyne Part Number 868-6282-0020) are shipped with the unit. Two brackets suitable for a 21-inch (535 mm) rack (marked ETSI) are available from Paradyne as a separate feature (see Appendix B, *Equipment List*).

Rack-mounting brackets may also be used to attach the unit to a wall.

NOTE:

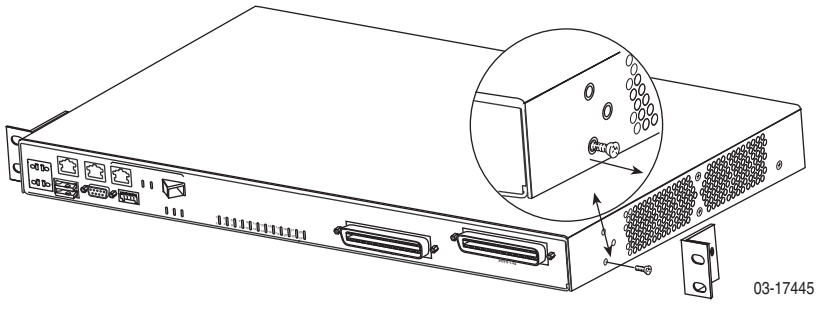
In this guide, the term *rack* refers to any rack, cabinet, frame, or bay suitable for mounting telecommunications equipment.

Installing the Brackets for Rack Mounting

▶ Procedure

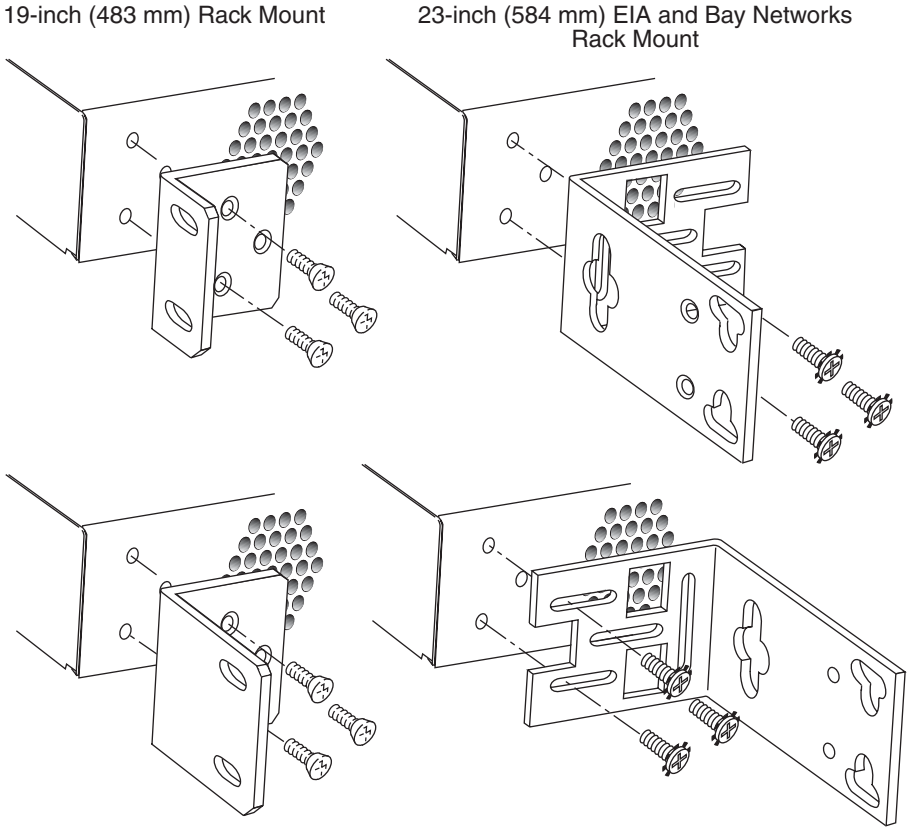
To install the mounting brackets for rack mounting:

1. Locate the black screw nearest the front panel on each side of the unit as shown.



2. Remove these two black screws (one from each side) before attempting to install the mounting brackets.

3. Identify six flat-head screws (for 19-inch racks) or six machine screws (for 23-inch racks) provided with the mounting brackets in the hardware kit.
4. Attach the brackets appropriate to your rack size. Tighten all screws firmly.


19-inch (483 mm) Rack Mount
23-inch (584 mm) EIA and Bay Networks Rack Mount
21.1-inch (535 mm) Rack Mount
23-inch (584 mm) Nortel Rack Mount
02-17324

Installing the GranDSLAM 4200 Into a Rack

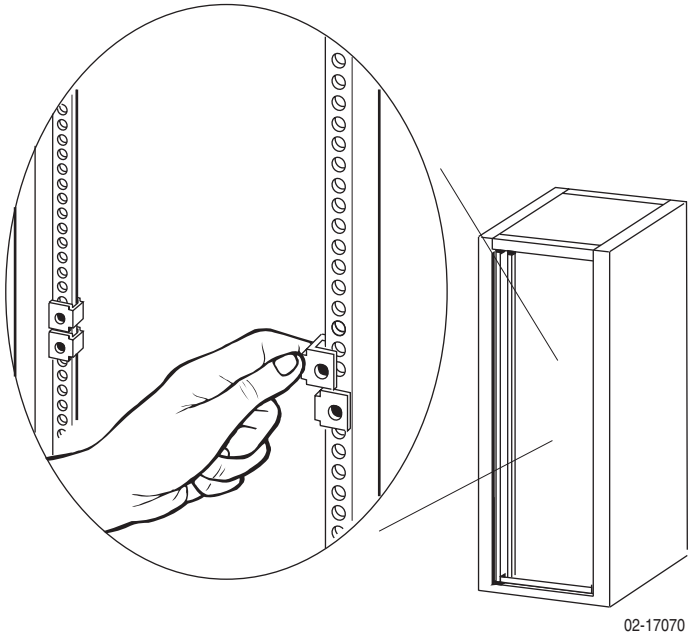
Two types of mounting screws are provided. Use:

- #10-32 mounting screws for rails with threaded screw holes
- #12-24 mounting screws and self-retaining nuts for rails with unthreaded screw holes

▶ Procedure

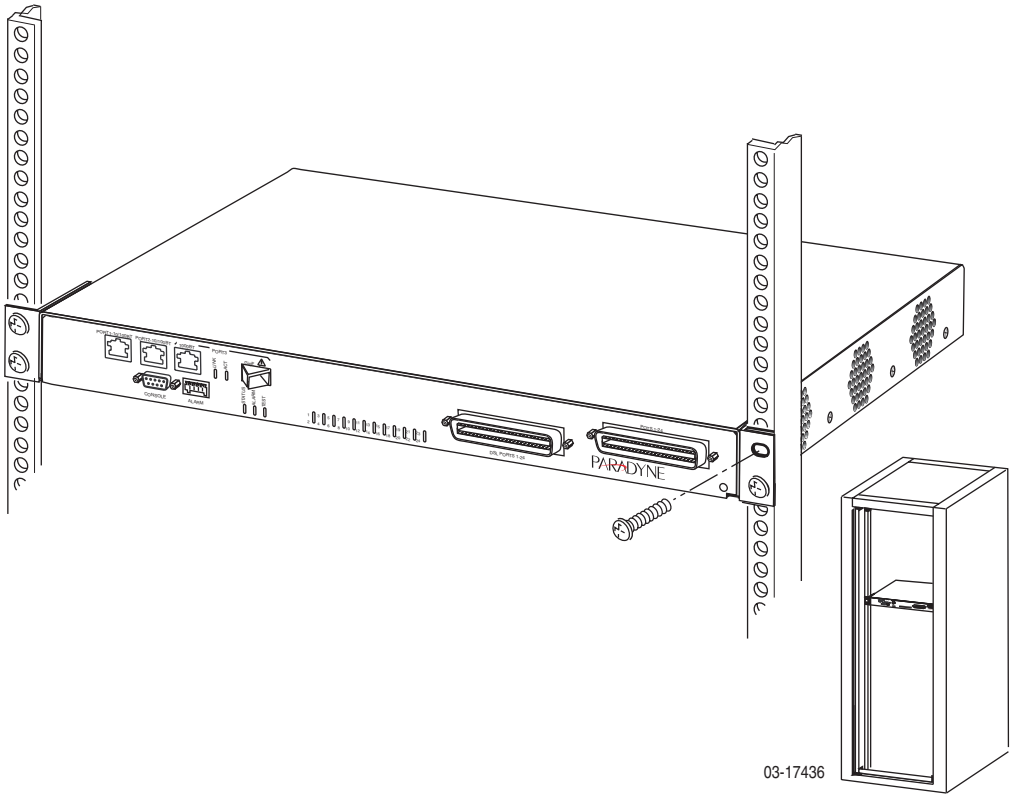
To install the GranDSLAM 4200 into a rack:

1. Determine where in the rack you will mount the GranDSLAM 4200. If your rack does not have threaded screw holes, slip self-retaining nuts onto the rails where the GranDSLAM 4200 will be fastened.



2. Place the unit so that the brackets rest against the front of the rails. Insert screws in the bottom screw positions and hand-tighten them.

3. Insert and tighten the screws in the top screw positions, then tighten the bottom screws.



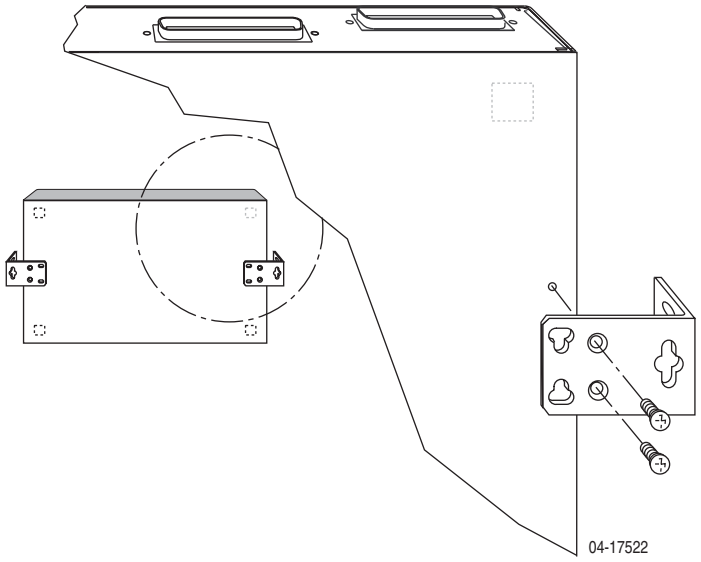
Installing the GranDSLAM 4200 on a Wall

Wall mounting requires two wood screws suitable for the weight of the fully cabled unit. These are not included. Use at a minimum 1/4-inch (6 mm) diameter screws in 3/4-inch (19 mm) plywood (not drywall).

▶ Procedure

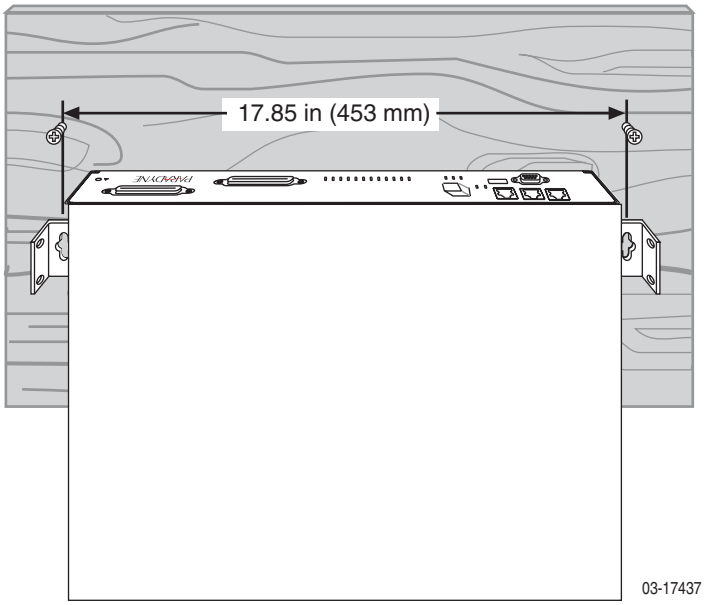
To install the GranDSLAM 4200 on a wall:

1. Identify the flat-head screws provided in the hardware kit and the brackets suitable for a 23-inch rack. Two screws are required for each bracket.
2. Orient the unit so that the bottom is facing you and the faceplate is at the top.
3. Locate the supplied Right Side mounting bracket and fasten it to the right side of the unit.



4. Locate the supplied Left Side mounting bracket and fasten it to the left side of the unit.
5. Tighten all screws firmly.

6. Install two wood screws (not provided) at the same height above the floor and 18.75 inches (476.25 mm) apart. Do not completely tighten the screws. Leave them so their heads are about 1/4 inch (6 mm) from the wall.



7. Hang the unit from the wood screws to verify that the screws are properly placed. The screws should freely slide into the top of the key slots in the brackets.

   Do not fasten the unit to the wall until after it is completely cabled and tested.

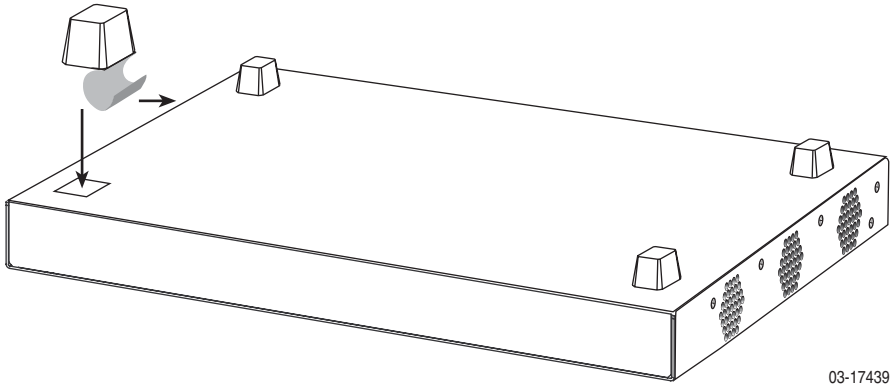
Installing the GranDSLAM 4200 on a Shelf or Desktop

If the GranDSLAM 4200 will be placed on a shelf or desktop, install the provided rubber feet before putting the unit in position.

▶ Procedure

To install the GranDSLAM 4200 on a shelf or desktop, as a standalone unit or in a stack:

1. Locate the rubber feet in the hardware kit provided with the unit.
2. Turn the unit upside down on a work surface. Squares stamped into the bottom of the unit show the proper positions for the feet.
3. Remove the protective sheet from the bottom of each foot, then press the foot onto a corner of the bottom of the unit.



4. Turn the unit right side up and place it in position on a shelf or desktop.

   If the installation includes more than one unit, one can be stacked atop another. Up to five units can be stacked together.

Cabling

2

Cabling Overview

The GranDSLAM 4200 has a large variety of possible cabling configurations. This chapter describes all possible connections, not all of which are required:

- *DSL Ports* on page 2-2
- *GigE Uplink (Port 3)* on page 2-3
- *10/100BaseT Uplink (Port 2)* on page 2-4
- *Chaining GrandDSLAM 4200s* on page 2-5
- *Management Port* on page 2-6
- *Ethernet Ferrite Choke Installation* on page 2-7
- *Console Port* on page 2-8
- *Alarm Interface* on page 2-10
- *Ground* on page 2-11
- *Connecting to Power* on page 2-12

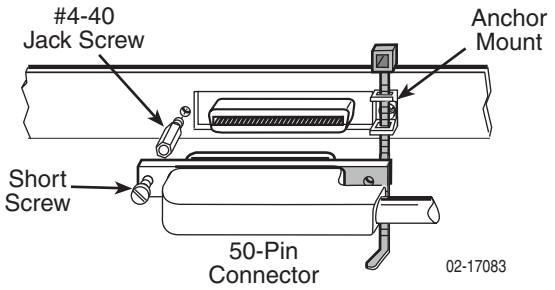
DSL Ports

The GranDSLAM 4200 DSL connector supports the tip and ring connections of up to 24 DSL ports over a 50-position cable. A POTS (plain old telephone service) splitter connector is also provided. If your model does not contain an integrated POTS splitter, you must connect the unit to a separate POTS splitter.

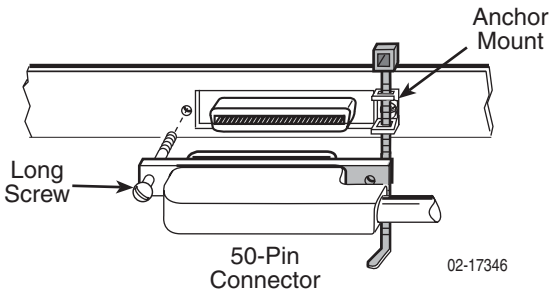
▶ Procedure

To cable the DSL Ports:

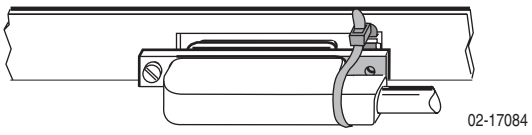
1. Insert a cable tie (provided) through the top of the anchor mount next to the DSL PORTS 1–24 connector.
2. If the connector for your cable has a short captive screw, attach the cable to the DSL PORTS 1–24 connector and fasten it to the jack screw with its short captive screw.



3. If the connector for your cable has a long captive screw, remove the provided jack screw from the threaded hole next to the DSL PORTS 1–24 connector. Attach the DSL PORTS 1–24 connector to the unit using the long, captive pan-head screw (provided).



4. Tighten the cable tie around the connector and trim the excess.



5. If using an integrated POTS splitter, the POTS 1–24 connector is used. Repeat Step 1 through Step 4, substituting POTS 1–24 for DSL PORTS 1–24.
6. Secure the cables as required for strain relief.

GigE Uplink (Port 3)

Port 3 comprises two interfaces, only one of which may be used at a time:

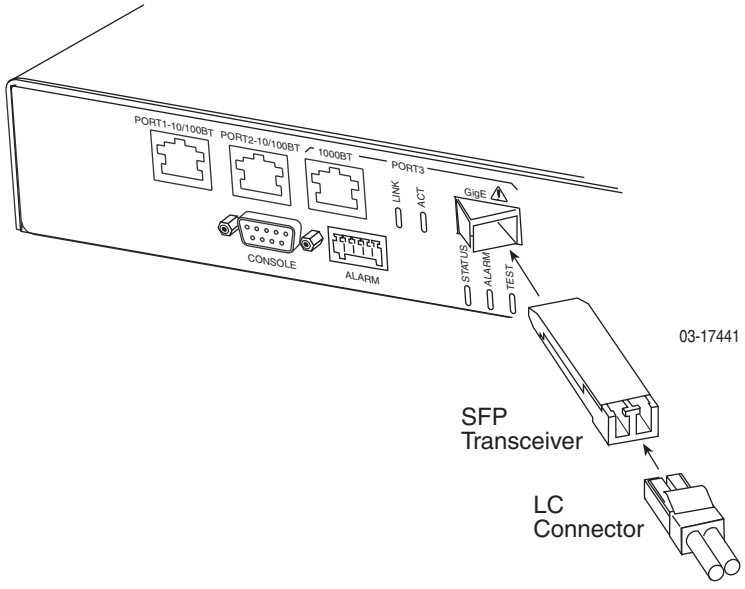
- An 8-position modular jack providing support for 1000BaseT
- A Small Form-Factor Pluggable (SFP) socket providing, with the appropriate transceiver installed, support for 1000BaseX. A single-mode 1000BaseLX transceiver is available from Paradyne. See Appendix B, *Equipment List*.

Either interface can be used as the uplink for a single GranDSLAM 4200, or for the terminating unit in a stack of GranDSLAM 4200s.

▶ Procedure

To use Port 3 as the uplink:

1. Connect the uplink cable to the GranDSLAM 4200:
   - **For a wire connection**, plug the 8-position modular plug of your uplink cable into the Port 3 1000BT modular jack. A straight-through cable can be used regardless of the destination interface, since the port automatically distinguishes between a Medium-Dependent Interface (MDI) and an MDI Crossover (MDIX).
   - **For a fiber connection**, plug your transceiver into the Port 3 GigE SFP socket. Plug the LC connector of your fiber optic uplink cable into the cable socket of the transceiver. Observing the minimum bend radius for your cable, fasten it with cable ties in such a way that it will not be kinked or snagged in the course of other cabling. If you do not know the specifications for your cable, maintain a radius of at least ten times the cable diameter.



2. Connect the other end of the uplink cable to the uplink interface, such as an Ethernet switch.

3. Port 3 (eth3) is the default uplink. If you have changed the default, use the **configure uplink** CLI command or the Configuration / Uplink screen of the web interface to specify eth3 as the uplink port.
4. **For a wire connection**, install a ferrite choke if one is included with your GranDSLAM 4200. See *Ethernet Ferrite Choke Installation* on page 2-7.

10/100BaseT Uplink (Port 2)

Port 2 can be configured as the uplink for a single GranDSLAM 4200, or for the terminating unit in a stack of GranDSLAM 4200s. A straight-through cable can be used regardless of the destination interface, since the port automatically distinguishes between an MDI and an MDIX.

▶ Procedure

To use Port 2 as the uplink:

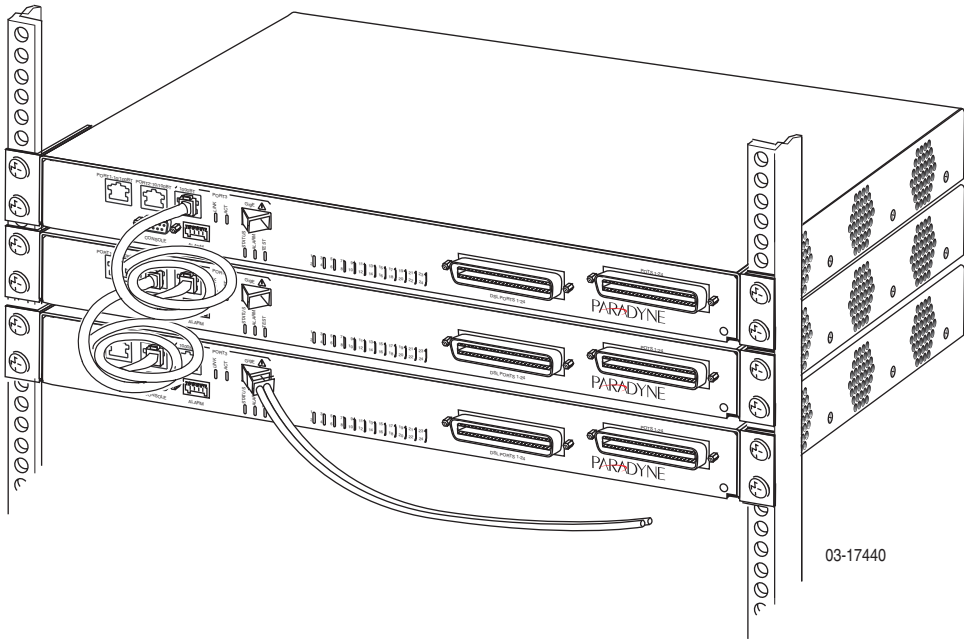
1. Connect an 8-position modular cable to Port 2.
2. Connect the other end of the cable to the uplink interface, such as an Ethernet switch.
3. Using the **configure uplink** CLI command or the Configuration / Uplink screen of the web interface, specify eth2 as the uplink port.

Install a ferrite choke if one is included with your GranDSLAM 4200. See *Ethernet Ferrite Choke Installation* on page 2-7.

Chaining GrandDSLAM 4200s

Up to eight GranDSLAM 4200s can be chained together to use a single uplink. The same port (eth2 or eth3) used as the uplink for one unit must be used as the downlink for the next. For example, in this illustration:

- The top unit has Port 3 (eth3) defined as its uplink and is connected to Port 3 of the next unit in the chain using a straight-through 8-position modular cable.
- The middle unit has Port 2 (eth2) defined as its uplink and is connected to Port 2 of the next unit.
- The bottom unit has Port 3 (eth3) defined as its uplink, which is the uplink for the stack. That unit is using the fiber interface.



Copper cables connecting:

- Port 2 to Port 2 must be at least 3 feet (0.9 m) long
- Port 3 to Port 3 must be at least 6 feet (1.8 m) long

A shorter cable may cause data errors.

Install a ferrite choke if one is included with your GranDSLAM 4200. See *Ethernet Ferrite Choke Installation* on page 2-7.

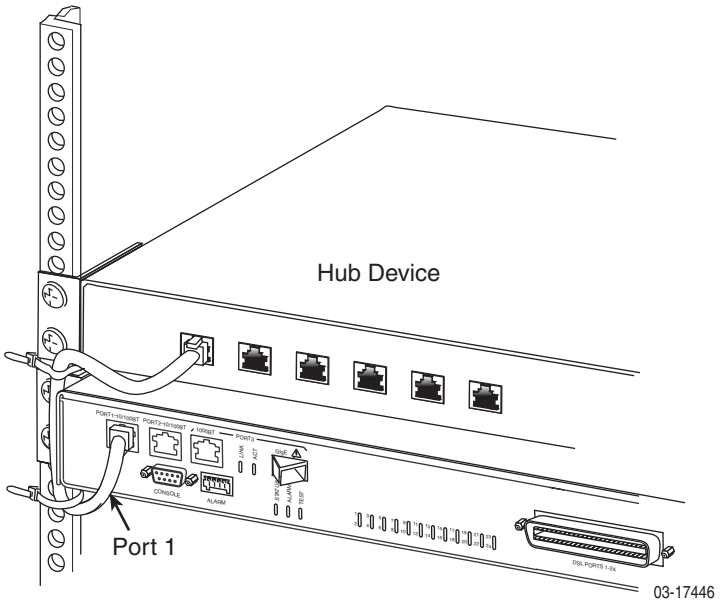
Management Port

Port 1 can be used to connect the GranDSLAM 4200 to a network management system using a 10BaseT or 100BaseT LAN. A straight-through cable can be used regardless of the destination interface, since the port automatically distinguishes between an MDI and an MDIX.

▶ Procedure

To use Port 1 as the out-of-band management port:

1. Connect an 8-position modular cable to Port 1.
2. If the GranDSLAM 4200 is in a rack, fasten the cable to a rail with a cable tie.
3. Connect the other end of the cable to your Ethernet hub or to a network interface card in a PC.



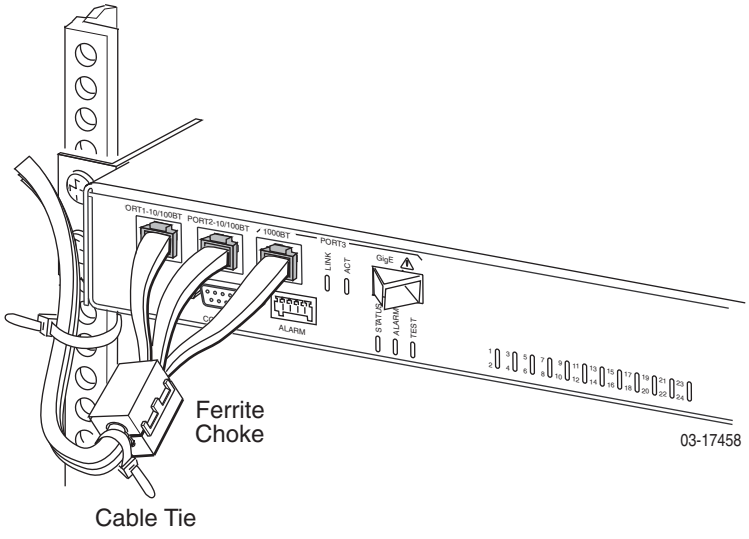
Install a ferrite choke if one is included with your GranDSLAM 4200. See *Ethernet Ferrite Choke Installation* on page 2-7.

Ethernet Ferrite Choke Installation

If NEBS compliance is required, install the ferrite chokes included in the NEBS Compliance Upgrade, Feature Number 4200-F4-000. The smaller of the two ferrite chokes must be installed on the alarm cable, if used. (See *Alarm Interface* on page 2-10.) The larger of the two ferrite chokes must be installed on any Ethernet cables used:

▶ Procedure

1. Open the ferrite choke. Lay any cable connected to the 10/100BaseT ports or 1000BaseT port in the ferrite choke.
2. Snap the ferrite choke shut around the cables and slide it as close as possible to the chassis.
3. Secure the ferrite choke in place with a cable tie.



Console Port

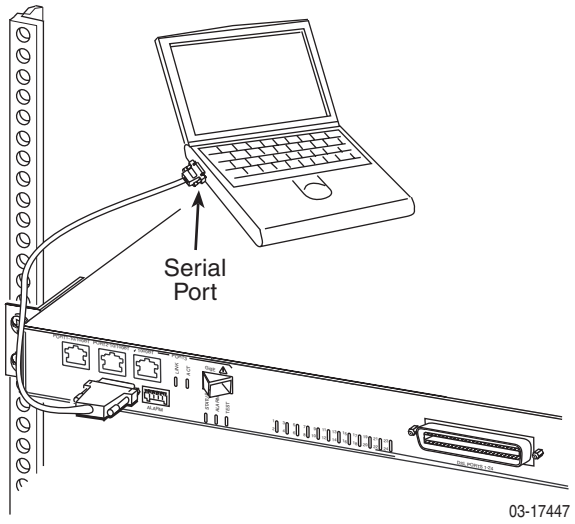
The CONSOLE port normally serves as the primary user interface with the GranDSLAM 4200 during installation. You can connect a terminal or PC directly to the CONSOLE port using a DTE cable (see procedure below). You can also use the CONSOLE port to attach a modem to the GranDSLAM 4200 for remote dial-in management of the unit using a DCE cable (see *Connecting a Modem to the Console Port* on page 2-9).

Connecting a Terminal or PC to the Console Port

▶ Procedure

To connect a terminal or PC to the CONSOLE port:

1. Configure the terminal or terminal emulation program to use the following parameters:
   - — Maximum speed: 9600 bps
   - — Data bits: 8
   - — Parity: None
   - — Flow Control: None
   - — Stop bits: 1
2. Determine and procure the proper Data Terminal Equipment (DTE) cable type. The CONSOLE port requires a DB9 plug connector. The other connector depends on the serial port on your terminal or PC.
3. Connect the DB9 plug connector to the CONSOLE port socket. The CONSOLE port is ordinarily used only during installation, so do not fasten the connector.
4. Connect the other end of the cable to the serial port of your terminal or PC.

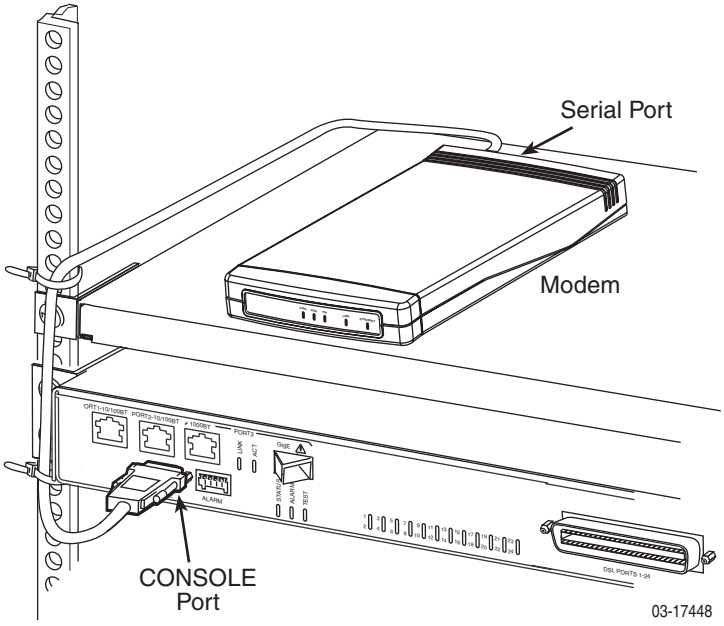


Connecting a Modem to the Console Port

▶ Procedure

To connect a modem to the CONSOLE port:

1. Determine and procure the proper DCE cable type for your modem. The CONSOLE port requires a DB9 plug connector. The other connector depends on the serial port on your modem, but normally a DB25 plug is required. The cable must be an EIA-232E crossover (null modem) cable.
2. Connect the DB9 plug connector to the CONSOLE port socket.
3. If the modem will be permanently connected, fasten the connector to the Management Module with its captive screws. If the GranDSLAM 4200 is in a rack, dress the cable to the left and attach it to the rail with a cable tie.
4. Connect the other end of the cable to the serial port of your modem.



Alarm Interface

The ALARM interface consists of five contacts. Three of the contacts provide access to alarm relays that that can be used to set off Major and Minor physical alarms. The other two contacts provide access to a sense circuit that can be used to detect the open or closed condition of an external alarm relay.

A 5-position plug provided in the hardware kit is used to connect 20–28 AWG wire to the ALARM terminal block (see Table 1-3, Contents of Hardware Kit Shipped with the GranDSLAM 4200, in Chapter 1, *Installation*).

The contacts are closed during normal operation. They open in response to loss of power, hardware failure, or other alarm conditions. See *ALARM Connector* in Appendix A, *Connectors and Pin Assignments* for more information.

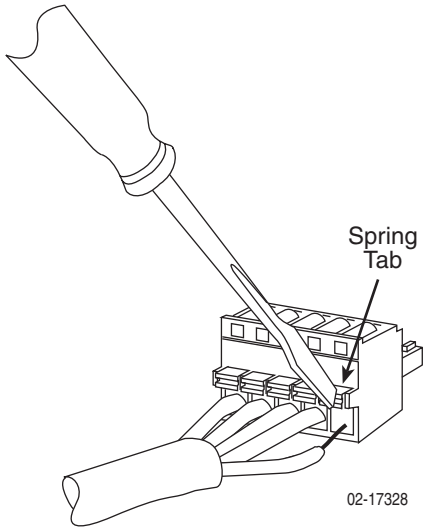
CAUTION:

The ALARM Sense + and Sense – contacts are intended to be connected to an external alarm relay. Do not apply power to these contacts; doing so will result in damage to the unit.

▶ Procedure

To connect the ALARM interface:

1. Strip the tips of the alarm source wires about 1/2 inch (13 mm).
2. Use a screwdriver to press the orange spring tab in while inserting the wire into the hole below it. The insulation should be fully within the plug and no bare wire should be exposed outside of the plug.



3. Insert the plug into the ALARM interface on the front panel of the GranDSLAM 4200.
4. If the GranDSLAM 4200 is in a rack, dress the cable to the left and secure it to the rail with a cable tie.
5. Connect the other end of the cable to your alarm monitoring system.

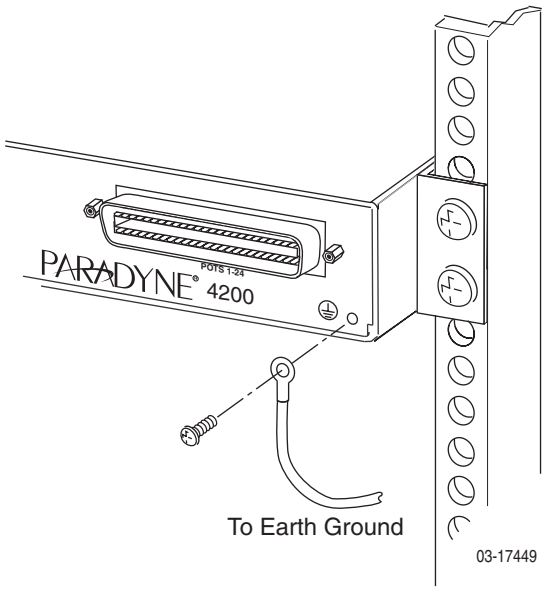
6. If NEBS compliance is required, install the ferrite chokes included in the NEBS Compliance Upgrade, Feature Number 4200-F4-000. The larger of the two ferrite chokes must be installed on any Ethernet cables used. (See *Ethernet Ferrite Choke Installation* on page 2-7.) The smaller of the two ferrite chokes must be installed on the alarm cable. Open the ferrite choke then snap it shut around the alarm cable as close as possible to the ALARM jack. Secure it with a cable tie.

Ground

▶ Procedure

To connect the unit to a ground:

1. Crimp a ring terminal onto the stripped end of 14 AWG or heavier copper ground wire.
2. Remove the screw marked by the ground symbol (⏚) at the right side of the front panel.
3. Fasten the ring terminal to the front panel using the same screw.
4. Attach the ground wire to an earth ground.



Connecting to Power

The GranDSLAM 4200 is powered by a nominal –48 or –60 VDC source providing –40 to –72 VDC. Dual power feeds are provided for redundancy. The terminal block accepts 18 to 14 AWG wire.

The 4200 GranDSLAM contains two external fuses, each with a visual spring indicator and an alarm circuit indicator in case the fuse is blown.

Using a Single DC Power Source

▶ Procedure

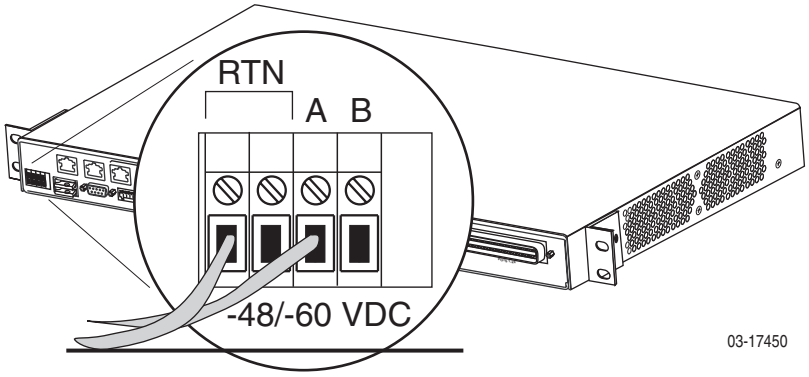
✔ Make sure that the DC power source wires are not powered (that is, the circuit breakers or fuses are open at the source).

✔ The ends of the power source wires (18–14 AWG or 0.75–2.5 mm^2 solid or stranded wire) must be stripped of insulation. If the wires are not stripped, strip the tip of each wire about 1/2 inch (13 mm) before inserting the wire into the appropriate terminal on the –48/–60V input terminal block.

To supply –48/60 VDC power to the GranDSLAM 4200 from a single power source:

1. Insert the following wires into Terminal A and securely fasten each wire by tightening the screw above it. The insulation should be fully within the terminal block and no bare wire should be exposed outside of the block.
2. Clearly label these power source wires as –48V (or –60V) and RTN.

Insert the . . .	**Into the . . .**
Negative wire from the power source	–**48/–60V A** input terminal.
Positive wire from the power source	Left **RTN** (return) terminal.



3. Turn on power to the GranDSLAM 4200.
4. Make sure the STATUS LED on the front panel is ON (green). See Chapter 3, *LEDs*.

Using Two DC Power Sources for Power Redundancy

▶ Procedure

✔ Make sure that the DC power source wires are not powered (that is, the circuit breakers are open).

✔ The ends of the power source wires (18–14 AWG or 0.75–2.5 mm^2 solid or stranded wire) must be stripped of insulation to about 1/2 inch (13 mm) in length before inserting the wires into the appropriate terminal on the –48/–60V input terminal block.

To supply two DC power sources to the GranDSLAM 4200 for power redundancy:

1. Insert the following wires in the appropriate terminal and securely fasten each wire by tightening the screw directly above it. The insulation should be fully within the terminal block and no bare wire should be exposed outside of the block.
2. Clearly label these four power source wires as –48V A (or –60V A), RTN A, –48V B (or –60V B), and RTN B.

Insert Power Source . . .	Into the . . .
Negative side of the first power source (Power Source A)	–**48/–60V A** input terminal.
(Optional) Negative side of the second power source (Power Source B)	–**48/–60V B** input terminal.
Positive side of the first power source (Power Source A)	Left **RTN** (return) terminal.
(Optional) Positive side of the second power source (Power Source B)	Right **RTN** (return) terminal.

3. If the unit is in a rack, dress the power cables to the left and fasten them to the rail with a cable tie.
4. Turn on power to the GranDSLAM 4200.
5. Make sure the STATUS LED on the front panel is ON (green). See Chapter 3, *LEDs*.

LEDs

3

LED Locations

The locations of the System and DSL Port LEDs on the front panel of the GranDSLAM 4200 are shown in Figure 3-1, Front Panel LEDs.

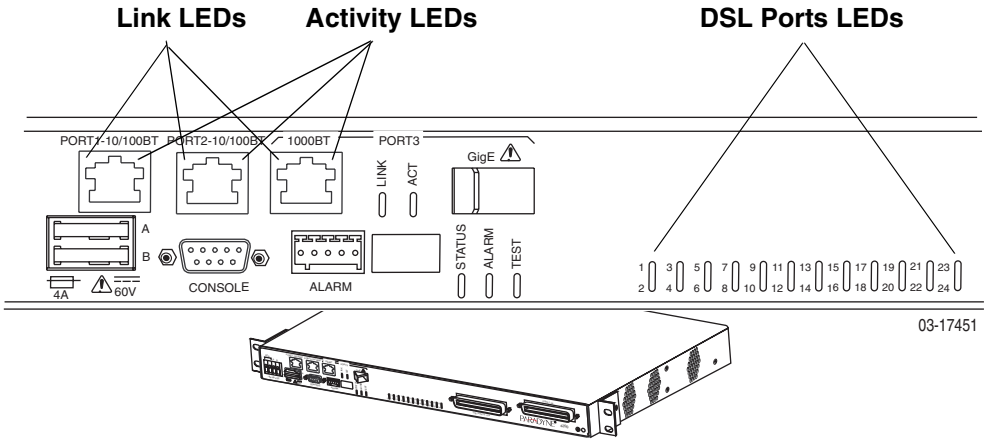


Figure 3-1. Front Panel LEDs

LED Meanings

When power is first applied to the unit, it performs a power-on self-test. When this test is successfully completed, the Status LED blinks. The meaning of all the LEDs is shown in Table 3-1, Front Panel LEDs.

Table 3-1. Front Panel LEDs

LED	Color	State	Meaning
Link*	Green	Off	No Ethernet link present.
		On	Ethernet Link present.
		Flashing	Ethernet link is present, but port is administratively disabled.
Activity*	Green	Off	No data is being transferred.
		On	Data is being transferred.
STATUS	Green	Off	No power, or the unit has not completed initialization.
		On	Unit has power and has completed initialization.
ALARM	Amber	Off	No Alarms.
		On	Unit failed self-test, or the unit has exceeded a safe temperature, or a fan has failed.
TEST	Amber	Off	Normal operating mode.
		On	At least one port is in test mode.
DSL Ports (LEDs numbered 1–24 correspond to DSL ports 1–24)	Green	Off	The port is disabled or no signal is detected on the line.
		On	Port has successfully trained with the remote and is active.

* The three RJ45-type connectors for Port 1, Port 2, and Port 3 bear two LEDs: the left one is the Link LED and the right one is the Activity LED. The SFP socket for Port 3 has two adjacent LEDs marked LINK and ACT.

Configuration

4

Overview

The GranDSLAM 4200 is designed to require minimal configuration before it can be accessed by a Network Operations Center (NOC). When the GranDSLAM 4200 is first powered up it is a fully functional bridge, and all DSL ports are set to their maximum speed.

Initial configuration is performed using the Command Line Interface (CLI). The CLI is available from a terminal or PC connected to the CONSOLE port.

Additional configuration may be necessary, depending on the mode used to manage the GranDSLAM 4200:

- Inband
- Out of band through Port 1

This can be performed using the CLI, SNMP, or the web interface.

For more configuration information, see the *BitStorm 2600 and GranDSLAM 4200 IP DSLAM Command Line Interface Reference* (for the CLI) and the online Help (for the web interface).

Conventions Used

In this book, the Enter key means whatever key you use to submit data to your terminal or PC. It may be called the Return key on older devices.

Characters displayed on your screen, including those you type, are shown in the **`Courier`** font in this book.

Using the CLI

A command line interface (CLI) can be used to configure and monitor the unit. The CLI is available from a PC or terminal connected to the Console port, or from a Telnet session with the device.

The following commands are available:

Table 4-1. CLI Commands

Command	Function
clear	Clear the system log.
configure	Enter Configuration mode.
copy	Copy from one file to another.
date	Set the time zone and date format.
end	If user is in Administrator mode, shifts to User mode; if user is in User mode, positions interface at top of menu tree.
exit	Terminate current session.
firmware	Download or apply new firmware.
paging	Enable or disable paging (*more* prompt) for this session.
privilege	Enable administrator mode.
restart	Restart a unit.
show	Display configuration, statistics, and status.
technical-support	Display information for contacting technical support.
test	Test the system.

Descriptions of some essential configuration commands follow.

Configure Management Default Gateway Address

The **configure management default gateway** command specifies the IP address of the next hop router for the management traffic.

configure management default-gateway {ip_address}
Minimum Access Level: **Administrator**
ip_address – Specifies the IP address of the default gateway for the management ports. **Example:** `PDYN# configure management default-gateway 137.90.127.1`

Configure Management Inband Address

The **configure management inband address** command specifies the IP address of the unit.

configure management inband address {ip_address} { subnet_mask}
Minimum Access Level: **Administrator**
ip_address – Specifies the management IP address. Default is 0.0.0.0 (disabled). Do not configure inband and out-of-band management on the same subnet. **subnet_mask –** Specifies the subnet mask to be applied to the IP address. The default mask is 255.255.255.0. Example: PDYN# **configure management inband address 137.90.127.3 255.255.255.0**

Configure Management Out-of-Band Address

The **configure management out-of-band address** command specifies the IP address of the unit that will accept management traffic on the out-of-band management port.

configure management out-of-band address {bootp | {{ip_address} { subnet_mask} }
Minimum Access Level: **Administrator**
bootp – Specifies that a BOOTP server will determine the management IP address. **ip_address –** Specifies the management IP address. The default address is 10.10.10.10. Do not configure inband and out-of-band management on the same subnet. **subnet_mask –** Specifies the subnet mask to be applied to the IP address. The default mask is 255.255.255.0. Example: PDYN# **configure management out-of-band address bootp** PDYN# **configure management out-of-band address 137.90.80.3 255.255.255.0**

GranDSLAM 4200 Startup Procedure

You can initialize your GranDSLAM 4200 via a PC or terminal connected to the unit's CONSOLE port. Then, using a series of CLI commands, GrandVIEW EMS or another Element Management System, or the web interface, you can configure the unit according to your requirements.

Login

▶ Procedure

To log in to the GranDSLAM 4200:

1. Connect a PC or terminal to the CONSOLE port. (See *Console Port* in Chapter 2, *Cabling*.)
2. At the *login>* prompt, type **admin** and press Enter.
3. At the *password>* prompt, press Enter. The default login password is blank.
4. At the *PDYN>* prompt, type **privilege** and press Enter.
5. At the *password#* prompt, press Enter. The default privileged password is blank.

You are now logged on and in privileged mode, which allows you to configure the unit.

Management Modes

The startup procedure for the GranDSLAM 4200 system differs depending on the type of management used:

- Inband Management – Operates over the uplink.
- Out-of-Band Management – Operates over Port 1.

Startup Procedure for Inband Management

With inband management, the GranDSLAM 4200 is managed using the uplink port.

▶ Procedure

To start up the GranDSLAM 4200 using inband management:

1. Specify the uplink port using the **configure uplink** command. It must be either **eth2** (Port 2) or **eth3** (Port 3). For example:

   ```
   PDYN# configure uplink eth3
   ```

2. Assign an IP address, netmask, and next-hop router using the **configure management** command. For example:

   ```
   PDYN# configure management inband address 137.90.127.3
   255.255.255.0

   PDYN# configure management default-gateway
   137.90.127.1
   ```

   Do not configure inband and out-of-band management on the same subnet.

Startup Procedure for Out-of-Band Management

In out-of-band management, you manage the unit through Port 1.

▶ Procedure

To start up the GranDSLAM 4200 using out-of-band management:

1. Assign an IP address, netmask, and next-hop router using the **configure management** command. For example:

   ```
   PDYN# configure management out-of-band address
   137.90.80.3 255.255.255.0

   PDYN# configure management default-gateway 137.90.80.1
   ```

   You can now access the web interface by typing into the Location field of your web browser the IP address assigned to the Port 1. See *Using the Web Interface* on page 4-6.

   Do not configure inband and out-of-band management on the same subnet.

2. Configure routers as necessary to route data from the NOC to the GranDSLAM 4200.

Using the Web Interface

To access the web interface:

▶ Procedure

1. Open your web browser. (Internet Explorer Version 6 or above is recommended.)
2. Type http:// and the IP address of the GranDSLAM 4200 into the Address field of your browser window. For example:

3. A login window appears. Enter the default User ID (**admin**) and leave Password blank. Click on OK. The web interface screen appears.
4. Click on the menu tab appropriate to what you would like to do:
   - — Configuration – To configure the system and interfaces
   - — Status – To display statistics, status, and contents of memory
   - — System – To display system information, download firmware, back up configurations, and modify users
   - — Diagnostics – To start and stop tests

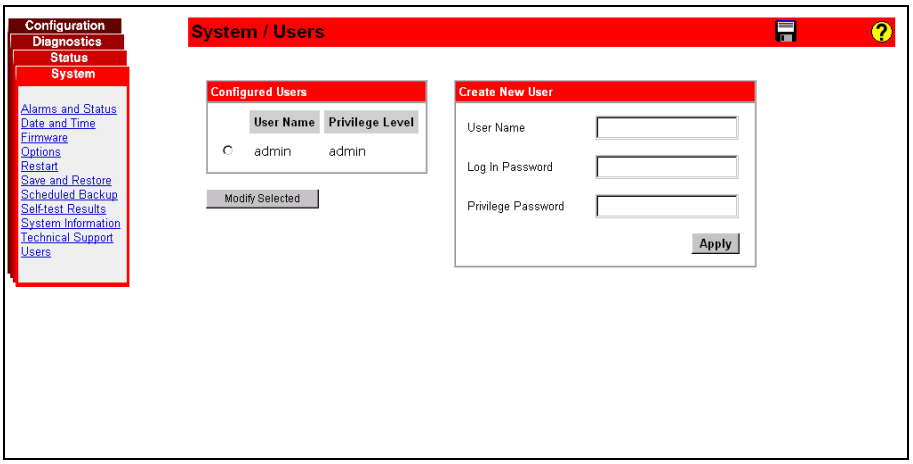
System / Users

For security reasons, it is a good idea to change the default password the first time you use the system.

▶ Procedure

To change the default password for user **admin**:

1. Click on the System menu tab, then click on Users. The folllowing screen appears.



2. In the Configured Users box, select **admin** by clicking in the circle next to it.
3. Click on Modify Selected. The System / Users / admin screen appears.
4. Type in a new Login Password and a new Privilege Password, then click on Apply. Keep a record of the new password.

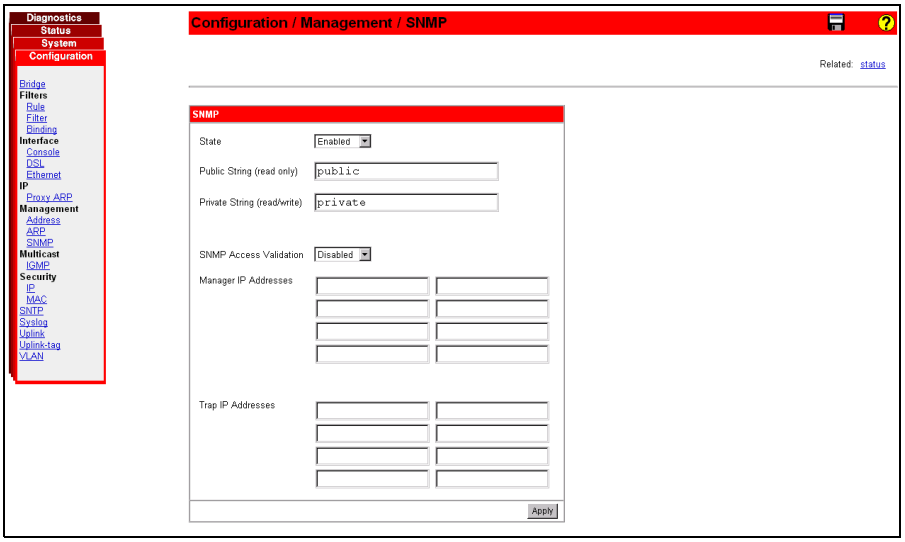
Configuration / Management / SNMP

SNMP access to the unit is enabled by default. The read-only community string is **public**, and the read-write string is **private**. Community strings, network management system addresses, and trap manager addresses can be set using the System/Management/SNMP screen.

▶ Procedure

To set SNMP parameters:

1. Click on the Configuration menu tab, then click on SNMP. The System/Management/SNMP screen appears.



2. Enter new SNMP parameters as desired. Click on Apply.

Connectors and Pin Assignments

A

Overview

The following sections provide pin assignments for:

- *DSL Ports and POTS Splitter Connectors* on page A-2
- *Port 1 and Port 2 10/100BaseT Connectors* on page A-3
- *Port 3 1000BaseT Connector* on page A-3
- *Port 3 GigE SFP Connector* on page A-4
- *Console Port Connector* on page A-5
- *ALARM Connector* on page A-6

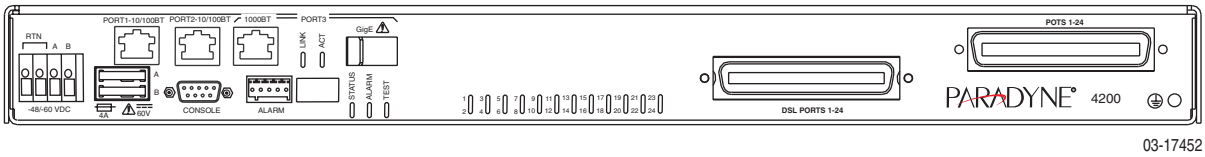


Figure A-1. GranDSLAM 4200 IP Front Panel

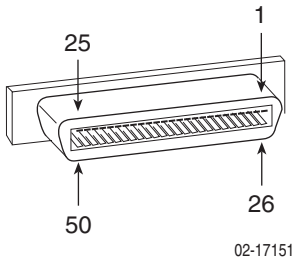
DSL Ports and POTS Splitter Connectors

The 50-pin RJ21X Telco connector labeled DSL Ports 1–24 provides the 2-wire loop interface from each DSL port to the demarcation point. (The Canadian designation for this connector is CA21A.) The 50-pin RJ21X Telco connector labeled POTS 1–24 provides the interface with the internal POTS splitters, if installed.

Table A-1 lists the pin assignments for each of these interfaces. Note that Pins 25 and 50 are not used.

Table A-1. DSL Connector Pinouts

DSL Port	Connector Pins (Ring, Tip)
1	1, 26
2	2, 27
3	3, 28
4	4, 29
5	5, 30
6	6, 31
7	7, 32
8	8, 33
9	9, 34
10	10, 35
11	11, 36
12	12, 37
13	13, 38
14	14, 39
15	15, 40
16	16, 41
17	17, 42
18	18, 43
19	19, 44
20	20, 45
21	21, 46
22	22, 47
23	23, 48
24	24, 49

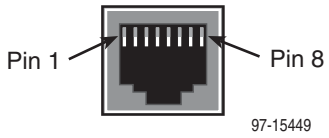


Port 1 and Port 2 10/100BaseT Connectors

Port 1 and Port 2 are 8-pin unkeyed modular jacks for a 10/100Base interface.

Table A-2. Port 1 and Port 2 Pinouts

Signal	Pin
Transmitted Data +	1
Transmitted Data –	2
Received Data +	3
Unused	4
Unused	5
Received Data –	6
Unused	7
Unused	8

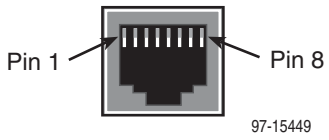


Port 3 1000BaseT Connector

Port 3's 1000BaseT interface is an 8-pin unkeyed modular jack.

Table A-3. Port 3 1000BaseT Connector

Signal	Pin
Tip 1	1
Ring 1	2
Tip 2	3
Ring 3	4
Tip 3	5
Ring 2	6
Tip 4	7
Ring 4	8



Port 3 GigE SFP Connector

Port 3's GigE interface is a standard SFP socket.

Table A-4. Port 3 GigE Connector

Signal	Pin
VeeT	1
TXFault	2
TXDisable	3
MOD-DEF(2) – I2C_DATA	4
MOD-DEF(1) – I2C_CLK	5
MOD-DEF(0) – SFP_PRESENT_L	6
Rate Select	7
LOS	8
VeeR	9
VeeR	10
VeeR	11
RD-	12
RD+	13
VeeR	14
VccR	15
VccT	16
VeeT	17
TD+	18
TD-	19
VeeT	20

Console Port Connector

The CONSOLE port connector is a DB9 socket connector that supports an EIA-232-E circuit as shown in Table A-5.

Table A-5. Console Port Connector

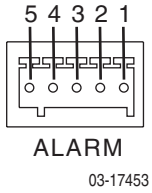
RS-232 Signal	Direction	Pin
Data Carrier Detect	Out	1
Receive Data	Out	2
Send Data	In	3
Data Terminal Ready	In	4
Ground	—	5
Data Set Ready	Out	6
Request to Send	In	7
Clear to Send	In	8
Ring Indicator	—	9

ALARM Connector

The alarm relay reports major alarms through the ALARM connector.

Table A-6. ALARM Connections

Signal	Direction	Contact
Major Alarm	Out	1
Common	Out	2
Minor Alarm	Out	3
Alarm Sense +	In	4
Alarm Sense –	In	5



The alarm contacts are closed during normal operation. They open in response to loss of power, hardware failure, or other alarm conditions. The maximum rated load for the alarm relays is:

- 30 VDC: 1.0 Amp
- 60 VDC: 0.6 Amp
- 60 VAC: 0.6 Amp

Equipment List

B

Table B-1. GranDSLAM 4200 Equipment List (1 of 2)

Description	Model Number
GranDSLAM 4200 (24-Port) ReachDSL without POTS Splitter *Includes GranDSLAM 4200, 19- and 23-inch mounting brackets and hardware, and Installation Guide.*	4219-A1-520
GranDSLAM 4200 (24-Port) ReachDSL with 900-Ohm POTS Splitter *Includes GranDSLAM 4200, 19- and 23-inch mounting brackets and hardware, and Installation Guide.*	4219-A1-530
GranDSLAM 4200 (24-Port) ReachDSL with 600-Ohm POTS Splitter *Includes GranDSLAM 4200, 19- and 23-inch mounting brackets and hardware, and Installation Guide.*	4219-A1-531
GranDSLAM 4200 (24-Port) ADSL without POTS Splitter *Includes GranDSLAM 4200, 19- and 23-inch mounting brackets and hardware, and Installation Guide.*	4229-A2-520
GranDSLAM 4200 (24-Port) ADSL with 900-Ohm POTS Splitter *Includes GranDSLAM 4200, 19- and 23-inch mounting brackets and hardware, and Installation Guide.*	4229-A2-530
GranDSLAM 4200 (24-Port) ADSL with 600-Ohm POTS Splitter *Includes GranDSLAM 4200, 19- and 23-inch mounting brackets and hardware, and Installation Guide.*	4229-A2-531
GranDSLAM 4200 (24-Port) SHDSL without POTS Splitter *Includes GranDSLAM 4200, 19- and 23-inch mounting brackets and hardware, and Installation Guide.*	4279-A1-520
Mounting Brackets for ETSI 21-inch (535 mm) Rack	4200-F1-001
Single-Mode 1000BaseLX SFP Transceiver (10 km, 1310 nm FP-LD)	4200-F3-000
Single-Mode 1000BaseLX SFP Transceiver (40 km, 1310 nm DFB-LD)	4200-F3-001

Table B-1. GranDSLAM 4200 Equipment List (2 of 2)

Description	Model Number
Single-Mode 1000BaseZX SFP Transceiver (80 km, 1550 nm DFB-LD)	4200-F3-002
Multimode 1000BaseSX SFP Transceiver (0.55 km, 850 nm VCSEL)	4200-F3-003
LC to SC Multimode Conversion Cable	8400-F1-001
LC to SC Single-Mode Conversion Cable	8400-F1-002
NEBS Compliance Upgrade	4200-F4-000
BitStorm 2600 and GranDSLAM 4200 IP Command Line Interface Reference (paper copy)	2600-A2-GB21
BitStorm 2600 and GranDSLAM 4200 IP SNMP Reference (paper copy)	2600-A2-GB22

Technical Specifications

C

Technical specifications are subject to change without notice.

Table C-1. GranDSLAM 4200 Technical Specifications (1 of 2)

Specifications	Criteria
Alarm Contacts Maximum Rated Load	■ 30 VDC: 1.0 Amp ■ 60 VDC: 0.6 Amp ■ 60 VAC: 0.6 Amp
Cooling and Air Handling	Each GranDSLAM 4200 is independently cooled with integral fans and does not rely on vertical air flow.
DSL Compatibility	Model 4219: ■ ReachDSL 2.2 Model 4229: ■ G.dmt (G.992.1) ■ G.lite (G.992.2) ■ ANSI T1.413-1998 ■ ADSL2 (G.992.3) ■ ADSL2+ (G.992.5) Model 4279: ■ G.SHDSL (G.991.2)
Electromagnetic Compatibility (EMC)	Meets the following standards: ■ CISPR 22, Class A ■ EN 300 386-2 ■ EN 55024 ■ EN 55022 ■ FCC Part 15, Class A ■ VCCI Class A

Table C-1. GranDSLAM 4200 Technical Specifications (2 of 2)

Specifications	Criteria
Interfaces	■ **DSL PORTS:** 50-pin RJ21X Telco-type connector ■ **POTS:** 50-pin RJ21X Telco-type connector ■ **CONSOLE:** DB9 (EIA-232-E) ■ **Port 1 and Port 2:** 8-pin modular jack (10/100BaseT) ■ **Port 3 copper interface:** 8-pin modular jack (1000BaseT) ■ **Port 3 fiber interface:** SFP socket
NEBS	The GranDSLAM 4200 is Network Equipment-Building System (NEBS) certified.
Operating Environment	Ambient Temperature: –40° to 65° C (–40° to 149° F) Relative Humidity: 5% to 95% noncondensing Storage Temperature: –40° to 85° C (–40° to 185° F) Shock and vibration tolerance sufficient to withstand normal shipping
Physical Dimensions	Height: 1.75″ (44.5 mm, or 1U as defined in EIA-310-C) without feet Width: 17.2″ (436.9 mm) without mounting brackets Depth: 11.8″ (299.7 mm) with cables
Weight	Model 4219-A1-520: 8.9 lbs (4.0 kg) Model 4219-A1-530: 10.8 lbs (4.9 kg) Model 4219-A1-531: 10.0 lbs (4.5 kg) Model 4229-A2-520: 8.2 lbs (3.7 kg) Model 4229-A2-530: 10.1 lbs (4.6 kg) Model 4229-A2-531: 9.3 lbs (4.2 kg) Model 4279-A1-520: 8.5 lbs (3.9 kg)
Power	The unit operates from a standard CO –48 or -60 VDC power supply (–40 to –72 VDC). Dual feeds are supported. The terminal block accepts 28 to 18 AWG bare wire. The unit has two replaceable external fuses with a visual spring indicator and an alarm.
Power Consumption	Model 4219: –48 VDC, 0.93A: 45 Watts Maximum –60 VDC, 0.75A: 45 Watts Maximum Model 4229: –48 VDC, 0.77A: 37 Watts Maximum –60 VDC, 0.62A: 37 Watts Maximum Model 4279: –48 VDC, 0.70A: 34 Watts Maximum –60 VDC, 0.57A: 34 Watts Maximum

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